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Tyco Docket No. 18060
(20958-2113)

REMARKS

Claims 1-21 remain pending in the present application. It is respectfully submitted that the pending claims define allowable subject matter.

Claims 1-21 have been rejected under 35 USC section 112, second paragraph, as being indefinite. Applicants respectfully traverse this rejection. It is respectfully submitted that the pending claims clearly positively recite only the tool, and not the circuit board nor the electrical connector. The claims affirmatively recite the structure of the removal tool, and not the circuit board nor connector. To the extent that the circuit board and connector are recited, such recitations are only in connection with limitations of the tool.

Claims 1-21 have been rejected under 35 USC section 102 B as being anticipate by Bartholet. Applicants respectfully traverse this rejection for reasons set forth hereafter.

Claim 1 recites a connector insertion and removal tool having an installation mechanism and an extraction mechanism. The installation mechanism is configured to be positioned proximate to a first surface of a circuit board, while the extraction mechanism is configured to be positioned proximate to a second opposite surface of the circuit board. The installation and extraction mechanisms are coupled to one another and at least one of the installation and extraction mechanisms comprises an actuator adapted for movement toward and away from the circuit board to insert and remove the connector onto and from the circuit board.

Bartholet fails to teach or suggest any such structure. Bartholet describes a reconfigurable end effector such as for use with a robotic hand. Bartholet's end effector includes three fingers or digits 10, 12 and 14 that may be pivoted and rotated with respect to a wrist member 16. The end effector is not described in any example in connection with inserting or removing connectors from a circuit board. Notwithstanding, even if the end effector of Bartholet were used to remove a connector form a circuit board, the end effector would operate in a substantially different manner than the claimed invention.

Attention is directed to the examples in Figures 6-14 to show various manners by which the end effector of Bartholet is used to manipulate and grasp objects. Figures 14A-

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14B illustrate the end effector to lift a load. Figures 9 and 13A illustrate the end effector grasping a rectangular object. It is submitted that to the extent Bartholet's end effector would be used in connection with inserting and removing connectors from circuit boards, the most analogous representation is illustrated in Figures 9 and 13. More specifically, the only manner by which Bartholet could achieve insertion or removal of a connector from a circuit board would be by grasping the connector in the manner shown in Figures 9 and 13A.

Bartholet's end effector does not include installation or extractor mechanisms provided on opposite first and second surfaces of the circuit board. Instead, to the extend Bartholet's end effector would be used with a connector, the digits 10, 12 and 14 would necessarily need to grasp opposite sides of the connector on one side of the circuit board. The digits 10, 12, 14 could not be located proximate opposite sides of the circuit board. Thus, it is submitted that Claim 1 is patentably distinct from Bartholet.

Claim 10 defines a tool that also is patentably distinct from the prior art. The tool of Claim 10 includes a first portion and a second portion, where the first portion is configured to be coupled to the first surface of the circuit board, while the second portion is configured to be located proximate to the second surface of the circuit board. The first and second portions have first and second actuators that are movable relative to the circuit board in a specific claimed manner. In particular, the first actuator is movable toward the first surface of the circuit board to disengage a first connector from the opposite second surface of the circuit board.

Bartholet lacks any such structure. The digits 10, 12 and 14 of Bartholet's end effector would only be able to grip the connector itself, and thus would not move toward a first surface of the circuit board to disengage the connector from a second surface of the circuit board. The claimed tool further includes a second actuator as part of the second portion, where the second actuator is movable toward the second surface of the circuit board to engage a second connector to the circuit board. Again, Bartholet lacks any such combination of actuators.

Claim 16 is further patentably distinct from the prior art. Claim 16 recites a tool that has first and second portions. The first and second portions have corresponding first and second pluralities of modular blocks that comprise first and second stationary alignment blocks. The first and second stationary alignment blocks are configured to be

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held stationary against the opposed first and second surfaces of the circuit board. The first and second portions also include corresponding actuator blocks that are movable toward and away from the corresponding opposite first and second surfaces of the circuit board. When the first movable actuator block is movable toward the first surface of the circuit board, it disengages the connector from the second surface of the circuit board. When the second actuator block moves toward the second surface of the circuit board, it engages a second connector to the circuit board. As indicated above, Bartholet's end effector lacks any such combination of structure. Bartholet's digits are only able, at best, to grip a connector. And entirely lack the claimed combination of stationary and actuator blocks. Thus, Claim 16 is also patentably distinct.

The dependent claims add additional limitations that are not within Bartholet. Claim 2 clearly defines the installation mechanism and the actuator to include a groove and rib combination extending toward the first surface in order to guide the actuator toward and away from the circuit board during insertion of the connector. Bartholet lacks any combination of a groove and rib. Claim 3 further defines the actuator to include extraction pins that align with, and extend into, a pin aperture field on the second surface of the circuit board to remove the connector from the first surface of the circuit board. Claim 5 further defines the extractor mechanism to include support plates that hold the actuator there between. The support plates are held stationary against the second surface of the circuit board while the actuator moves toward and away from the circuit board.

In view of the foregoing, it is respectfully submitted that the pending claims are final law of the subject matter. Should anything remain in order to test the present application in condition for allowance, the examiner is kindly invited to contact the owner signed at the telephone number listed below.

Respectfully submitted,



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